

We claim:

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1. A chemical vapor deposition (CVD) process for depositing SiO₂ films on a substrate, said process comprising the steps of:

- (a) disposing the substrate within a chemical vapor deposition reaction chamber;
- (b) introducing a gas volume of SiO₂ precursors into said chamber;
- (c) admitting a gas volume of ozone into the chamber;
- (d) exposing the volume of gases to a source of high intensity light to increase the atomic concentration of oxygen in the reactive gas volume.

Pub. 1
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2. The method of Claim 1 wherein the SiO₂ precursor is selected from the group consisting of TEOS, TMCTS (tetramethylcyclotetrasiloxane), DES (diethylsilane), DTBS (ditertiarybutylsilane), TMOS (tetramethylorthosilicate) and FTES (fluorotriethoxysilane).

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3. The method of Claim 2 further comprising the step of introducing a gas volume of a dopant source for the SiO₂.

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4. The method of Claim 3 wherein the dopant source for CVD deposition of the SiO₂ film is selected from the group consisting of triisopropylborate, TMB (trimethylborate), TEB (triethylborate), TEPO (triethylphosphate), TEPi (triethylphosphite), TMPo (trimethylphosphate), and TMPi (trimethylphosphite).

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5. The method of Claim 3 further comprising the step of introducing a gas volume of a carrier gas into the reaction chamber, to regulate the uniformity of film deposition on the substrate.

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6. The method of Claim 5 wherein the dopant source for CVD deposition of the SiO₂ film is selected from the group consisting of triisopropylborate, TMB (trimethylborate), TEB (triethylborate), TEPO (triethylphosphate), TEPi (triethylphosphite), TMPo (trimethylphosphate), and TMPi (trimethylphosphite).

1 7. The method of Claim 5 wherein the substrate is heated to a temperature within a
2 range of 200° C. to 700° C.

1 8. The method of Claim 7 wherein the substrate is heated to a temperature of about
2 480° C.

1 9. The method of Claim 6 wherein the substrate is heated to a temperature within a
2 range of 200° C. to 700° C.

1 10. The method of Claim 6 wherein the substrate is heated to a temperature of about
2 480° C.

1 11. The method of Claim 1 further comprising the step of introducing a gas volume of
2 a dopant source for the SiO₂.

1 12. The method of Claim 1 wherein the dopant source for CVD deposition of the SiO₂
2 film is selected from the group consisting of triisopropylborate, TMB (trimethylborate),
3 TEB (triethylborate), TEPO (triethylphosphate), TEPi (triethylphosphite), TMPo
4 (trimethylphosphate), and TMPi (trimethylphosphite).

1 13. The method of Claim 1 further comprising the step of introducing a gas volume of
2 a carrier gas into the reaction chamber, to regulate the uniformity of film deposition on
3 the substrate.

1 14. The method of Claim 1 wherein the substrate is heated to a temperature within a
2 range of 200° C. to 700° C.

1 15. The method of Claim 1 wherein the substrate is heated to a temperature of about
2 480° C.

1 16. The method of Claim 2 further comprising the step of introducing a gas volume of
2 a carrier gas into the reaction chamber, to regulate the uniformity of film deposition on
3 the substrate,

1 17. The method of Claim 2 wherein the substrate is heated to a temperature within a
2 range of 200° C. to 700° C.

1 18. The method of Claim 2 wherein the substrate is heated to a temperature of about
2 480° C.

1 19. The method of Claim 3 wherein the substrate is heated to a temperature within a
2 range of 200° C. to 700° C.

1 20. The method of Claim 4 wherein the substrate is heated to a temperature within a
2 range of 200° C. to 700° C.

1 21. The method of Claim 3 wherein the substrate is heated to a temperature of about
2 480° C.

1 22. The method of Claim 4 wherein the substrate is heated to a temperature of about
2 480° C.

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1 23. A chemical vapor deposition (CVD) process using ozone, for depositing films on
2 a substrate, said process comprising the steps of:

3 a) disposing the substrate within a chemical vapor deposition reaction
4 chamber;

5 (b) introducing a gas volume of a preselected reaction precursor compound into
6 said chamber;

7 (c) admitting a gas volume of ozone into the chamber;

8 (d) exposing the volume of gases to a source of high intensity light to increase the
9 atomic concentration of oxygen in the reactive gas volume.

1 24. A chemical vapor deposition (CVD) process for depositing films on a substrate,
2 said process comprising the steps of:

3 a) disposing the substrate within a chemical vapor deposition reaction
4 chamber;

5 (b) introducing a gas volume of a first preselected reaction precursor compound
6 into said chamber;

7 (c) admitting a gas volume of at least a second preselected reaction precursor
8 compound into said chamber;

9 (d) exposing the volume of gases to a source of high intensity light to increase the
10 atomic concentration of reaction compounds in the reactive gas volume.

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